

In the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

1 1. (Currently Amended) A system, comprising:
2 a processor that executes an algorithm;
3 a hardware unit that comprises one or more physical resources;
4 and
5 an abstraction layer implemented by said processor that
6 facilitates communication between the algorithm and the
7 hardware unit through the use of a plurality of functions
8 and that creates a reference to a logical resource that
9 is associated with a corresponding physical resource, the
10 plurality of functions comprise command functions that
11 request and grant the identifier to the algorithm
12 including a command function that branches to a function
13 that is optimized for the configured settings based upon
14 the a vector table that associates the reference to a
15 logical resource with a memory location of the function
16 that is optimized, and
17 wherein each logical resource is associated with at least one
18 private state that represents the most recently
19 configured settings of the logical resource.

1 2. (Original) The system of claim 1 wherein the reference
2 comprises a pointer to the logical resource.

1 3. (Original) The system of claim 1 wherein the plurality of
2 functions are selected from the group consisting of command
3 functions that request and grant the identifier to the algorithm,
4 configuration functions that pre-compute and store register values
5 and algorithm settings, synchronization functions that align the

6 logical resource with the physical resource, and a combination
7 thereof.

4. (Canceled)

1 5. (Currently Amended) The system of claim 4 1 wherein the
2 command functions comprise a function that monitors the physical
3 resources and updates a corresponding vector table that associates
4 the reference to a logical resource with a memory location of
5 function optimized for a current operation.

1 6. (Currently Amended) The system of claim 4 1 wherein the
2 command functions comprise a function that does not write to a
3 register associated with the physical resource if a previous use of
4 the physical resource has left the register in a state compatible
5 with a current operation.

7. (Canceled)

1 8. (Currently Amended) The system of claim 7 1 wherein the
2 function that branches and the function that is optimized for the
3 configured settings comprise functions with identical function
4 signatures.

9. (Canceled)

1 10. (Currently Amended) ~~The A system, of claim 9 comprising:~~
2 ~~a processor that executes an algorithm;~~
3 ~~a hardware unit that comprises one or more physical resources;~~
4 ~~an abstraction layer implemented by said processor that~~
5 ~~facilitates communication between the algorithm and the~~
6 ~~hardware unit through the use of a plurality of functions~~

7 and that creates a reference to a logical resource that
8 is associated with a corresponding physical resource,
9 wherein the plurality of functions are selected from the
10 group comprise configuration functions that pre-compute
11 and store register values and system state settings, and
12 wherein the configuration functions comprise a function
13 that selects and stores an address of a function that is
14 optimized for a current operation; and
15 wherein each logical resource is associated with at least one
16 private state that represents the most recently
17 configured settings of the logical resource.

1 11. (Currently Amended) A method for achieving high-performance
2 hardware abstraction, comprising:

3 creating a reference to a logical resource that is associated
4 with a corresponding physical resource;
5 associating with the logical resource one or more private
6 states that represents the most recently configured
7 settings of the logical resource; and
8 executing a plurality of functions that facilitate
9 communication between the physical resource and an
10 algorithm, wherein the plurality of functions comprise
11 command functions that request and grant the identifier
12 to the algorithm including a function that branches to a
13 function that is optimized for the configured settings
14 based upon the a vector table that associates the
15 reference to a logical resource with a memory location of
16 the function that is optimized.

1 12. (Original) The method of claim 11 wherein the reference
2 comprises a pointer to the logical resource.

1 13. (Original) The method of claim 11 wherein the plurality of
2 functions are selected from the group consisting of command
3 functions that request and grant the identifier to the algorithm,
4 configuration functions that pre-compute and store register values
5 and algorithm settings, synchronization functions that align the
6 logical resource with the physical resource, and a combination
7 thereof.

14. (Canceled)

1 15. (Currently Amended) The method of claim ~~14~~ 11 wherein the
2 command functions comprise a function that monitors the physical
3 resources and updates a corresponding vector table that associates
4 the reference to a logical resource with a memory location of
5 function optimized for a current operation.

1 16. (Currently Amended) The method of claim ~~14~~ 11 wherein the
2 command functions comprise a function that does not write to a
3 register associated with the physical resource if a previous use of
4 the physical resource has left the register in a state compatible
5 with a current operation.

17. (Canceled)

1 18. (Currently Amended) The method of claim ~~17~~ 11 wherein the
2 function that branches and the function that is optimized for the
3 configured settings comprise functions with identical function
4 signatures.

19. (Canceled)

1 20. (Currently Amended) The A method of claim 19 for achieving
2 high-performance hardware abstraction, comprising:

3 creating a reference to a logical resource that is associated
4 with a corresponding physical resource;
5 associating with the logical resource one or more private
6 states that represents the most recently configured
7 settings of the logical resource; and
8 executing a plurality of functions that facilitate
9 communication between the physical resource and an
10 algorithm, wherein the plurality of functions comprises
11 configuration functions that pre-compute and store
12 register values and algorithm settings and wherein the
13 configuration functions comprise a function that selects
14 and stores an address of a function that is optimized for
15 a current operation.

1 21. (Currently Amended) A storage medium comprising software that
2 performs one or more operations that facilitate communication
3 between a hardware unit and an algorithm, said software comprising:

4 instructions that create a reference to a logical resource
5 that is associated with a physical resource of the
6 hardware unit; and

7 instructions that associate with the logical resource at least
8 one private state that represents the most recently
9 configured settings of the logical resource; and

10 instructions that execute a plurality of functions that
11 facilitate communication between the physical resource
12 and an algorithm, wherein the plurality of functions
13 comprise command functions that request and grant the
14 identifier to the algorithm including a function that
15 branches to a function that is optimized for the
16 configured settings based upon the a vector table that

17 associates the reference to a logical resource with a
18 memory location of the function that is optimized.

1 22. (Original) The medium of claim 21 wherein the reference
2 comprises a pointer to the logical resource.

1 23. (Original) The medium of claim 21 wherein the plurality of
2 functions are selected from the group consisting of command
3 functions that request and grant the identifier to the algorithm,
4 configuration functions that pre-compute and store register values
5 and algorithm settings, synchronization functions that align the
6 logical resource with the physical resource, and a combination
7 thereof.

24. (Canceled)

1 25. (Currently Amended) The medium of claim ~~24~~ 21 wherein the
2 command functions comprise a function that monitors the physical
3 resources and updates a corresponding vector table that associates
4 the reference to a logical resource with a memory location of
5 function optimized for a current operation.

1 26. (Currently Amended) The medium of claim ~~24~~ 21 wherein the
2 command functions comprise a function that does not write to a
3 register associated with the physical resource if a previous use of
4 the physical resource has left the register in a state compatible
5 with a current operation.

27. (Canceled)

1 28. (Currently Amended) The medium of claim ~~27~~ 21 wherein the
2 function that branches and the function that is optimized for the

3 configured settings comprise functions with identical function
4 signatures.

29. (Canceled)

1 30. (Currently Amended) ~~The A storage medium of claim 29~~
2 comprising software that performs one or more operations that
3 facilitate communication between a hardware unit and an algorithm,
4 said software comprising:
5 instructions that create a reference to a logical resource
6 that is associated with a physical resource of the
7 hardware unit;
8 instructions that associate with the logical resource at least
9 one private state that represents the most recently
10 configured settings of the logical resource; and
11 instructions that execute a plurality of functions that
12 facilitate communication between the physical resource
13 and an algorithm, wherein the plurality of functions
14 comprises configuration functions that pre-compute and
15 store register values and algorithm settings and wherein
16 the configuration functions comprise a function that
17 selects and stores an address of a function that is
18 optimized for a current operation.